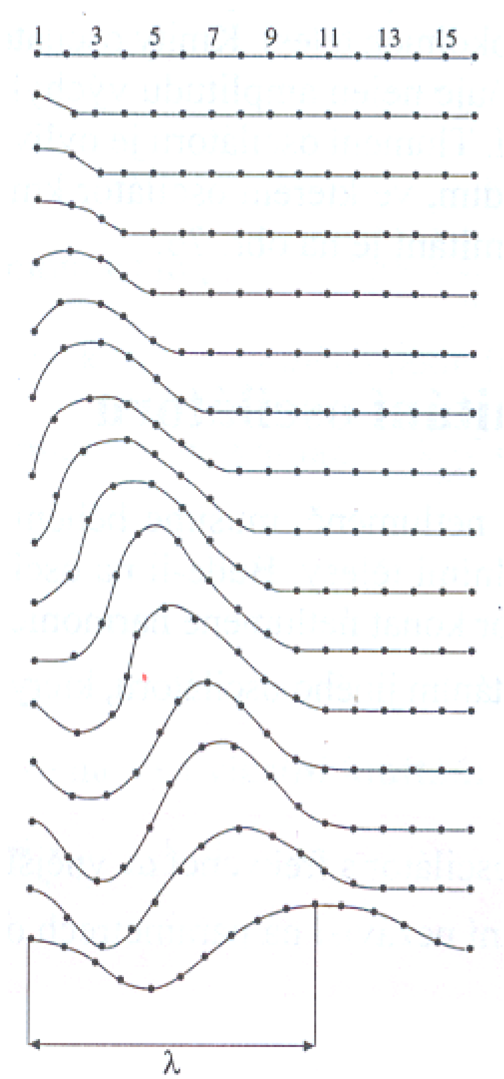
1 Mechanical Waviness

Mechanical Wave

Well, we have for example line that has been created from about 15 points.
In the case that we need to simulate something like rope or cable, we can use thing from physics, exactly mechanical wave.



When we move with the first point of line, oscillating is transmissed to other points of line, from the first to the second and so on.

Oscillating of the first point can be described by formula :

$$y = \sin(\omega t) \quad \text{where (omega) } \omega = 2\pi * f$$

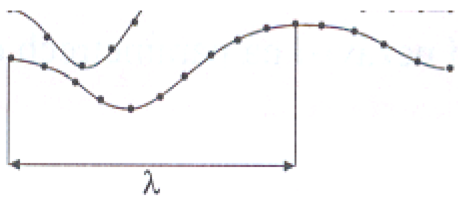
and F is frequency. Omega is globally called as angular velocity.

And how to describe position of each other point of line if make harmonic oscillating of the first point - source of line ? It's rather simple formula :

$$y = \sin(\omega t - \tau) \text{ where } \tau \text{ (tau)} = x / v$$

The "tau" is delayed time of each point, in this case "x" is distance each point from the first point - source of oscillating and "v" is velocity of oscillating.

In the case that we need to find "wave length", we can call it "lambda" we can use formula :



$$\lambda = v * T \quad \text{where } T = v / f$$

where "v" is velocity of oscillating and "T" is periode.

Finally formula could be :

$$y = \sin(2pi * [(t/T) - (x / \lambda)])$$

where t is time.

For example I made easy example in GLScene using GLHeightField. GLHeightField represents waves and one GLCube represents floating objects on the waves.

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